Model Ecosystems
Virtual Lab

Name:

Procedure:

1. Select the icon next to the animals’ and plants’ names from the Field Notes tablet and drag and drop them to the appropriate trophic level in the ecosystem pyramid.
2. Click the Check button when done to verify the accuracy of your placement. For each accurate placement, the names are replaced with pictures and the number of each kind of animal is displayed beneath it. (if you aren’t correct, it will show the correct ones and reset the wrong ones in the column again)
3. Click on the Pyramid of Energy button to display numbers indicating the amounts of energy.
4. Click the Pyramid of Numbers button to display numbers indicating numbers of plants and animals.
5. Analyze this data by calculating the conversion efficiency for each trophic level for each of the five ecosystems and record the results in the Data Table shown. The energy conversion efficiency is calculated by dividing the energy at the higher level by the energy at the lower level to obtain a ratio. Enter the value as a decimal number.
6. When all the data are recorded in the Data Table and analyzed, answer the Journal Questions.

**Energy Conversion Efficiency for Ecosystem Trophic Levels**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ecosystem | Producers | 1st Order Heterotroph | 2nd Order Heterotrophs | 3rd Order Heterotrophs |
| Deciduous Forest |       |       |       |       |
| Hot Desert |       |       |       |       |
| Grasslands |       |       |       |       |
| Antarctic Ocean Shore |       |       |       |       |
| Fresh Lake  |       |       |       |       |

Journal Questions:

1. Suggest reasons why the information represented in the pyramid of numbers of animals of one of the ecosystems you studied may not truly represent that ecosystem.

1. According to your data, what is the ratio of third-order consumers to producers? Explain your answer.

1. Compare and contrast two of the ecosystems you studied. How is the energy conversion efficiency similar or different?

1. Does the population size increase or decrease at higher trophic levels in the pyramid of numbers of an ecosystem consisting of a tree, insects (that are herbivores) and birds feeding on the insects? Explain your answer.

1. What might happen to an ecological pyramid of numbers in a forest ecosystem if most of the deer were killed due to hunting by people and disease?

1. What would happen to an ecosystem if the decomposers disappeared?

1. Could there be a food chain without herbivores and carnivores?